

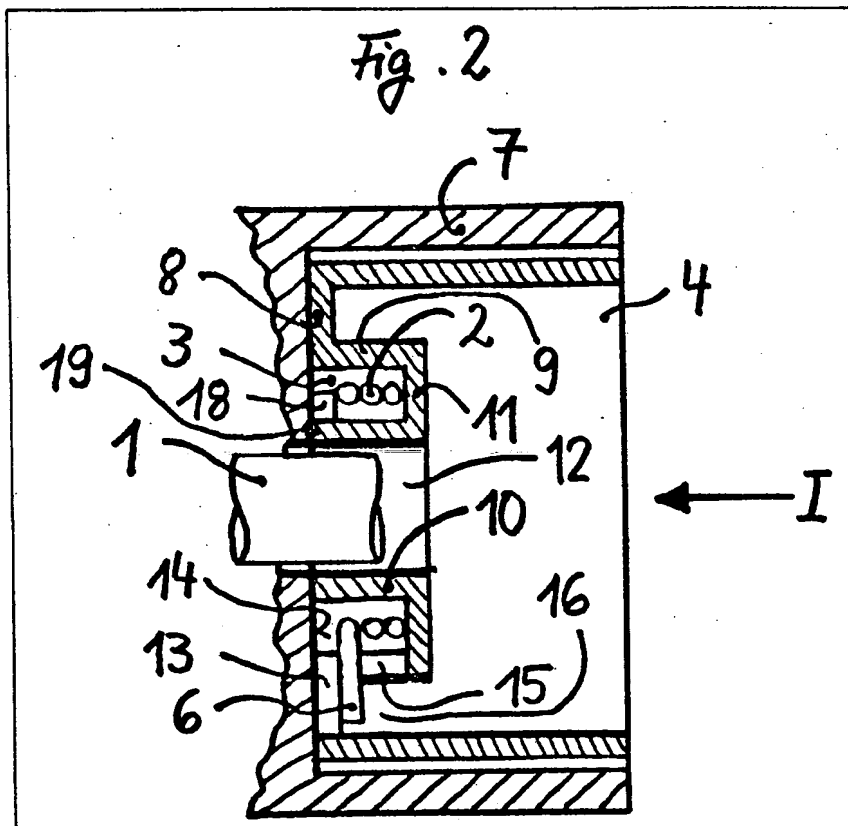
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## (54) Ignition and starter switch for motor vehicles

(57) An ignition and starter switch for motor vehicles, especially for incorporating in motor vehicle steering locks, is actuated by a rotatable switching spindle (1) and is provided with a pot-shaped housing (4) having an opening (12) in its base for the switching spindle (1), and further with a helical spring (2) for automatically returning the switching spindle (1) from a "start" angular position to a "drive" angular position. The spring (2) is mounted in an annular channel

(3), open towards the outside of the housing (4), which is preferably formed as a one-piece plastics component, the channel (3) lying between two concentric collars (9 and 10) which are joined together by an annular floor (11). The outer collar (9) projects away from the base (8) of the housing into the interior of the housing. The inner collar (10) extends away from the annular floor (11) back towards the plane of the base (8) of the housing and surrounds an opening (12) provided in the base of the housing (4) to receive the switching spindle (1).



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Fig. 1

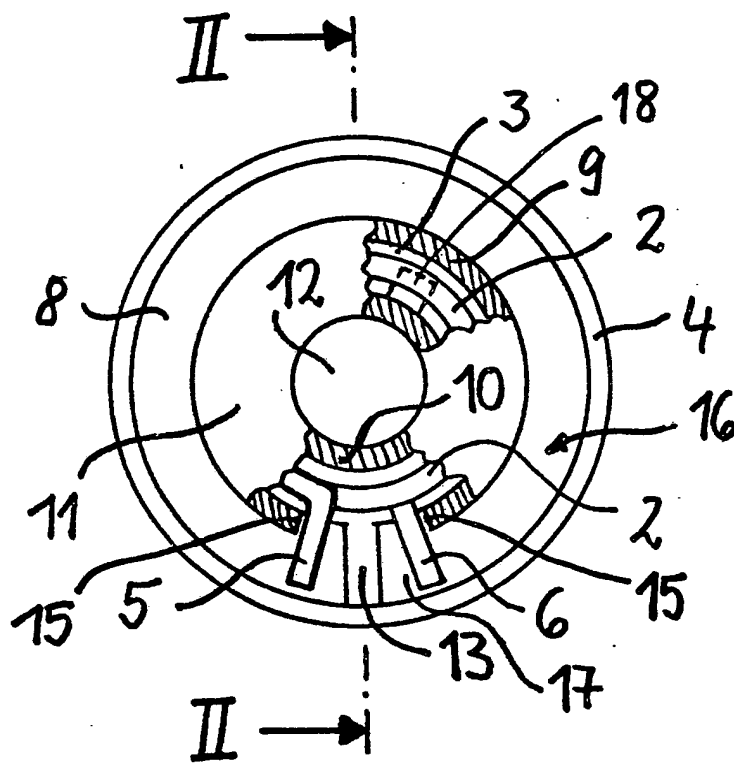
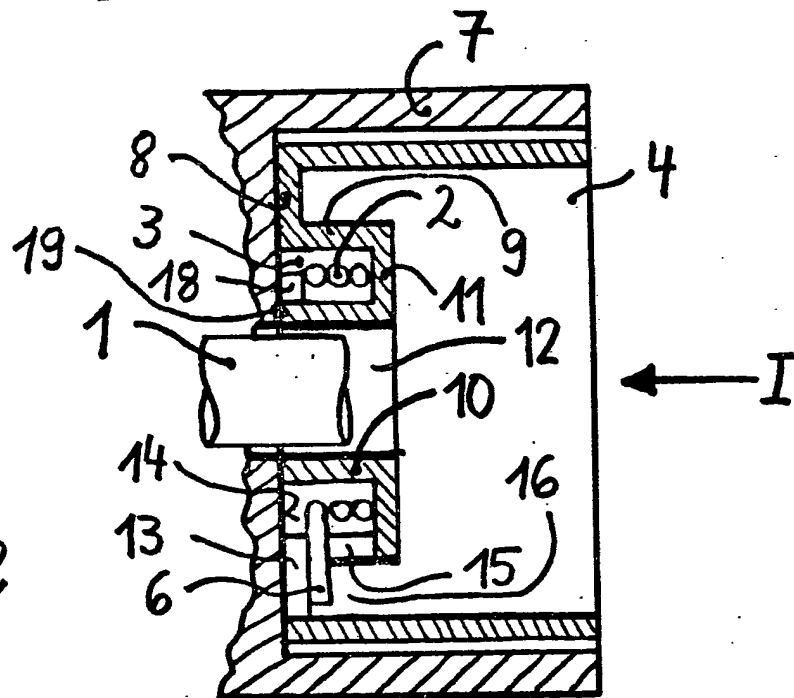


Fig. 2



## SPECIFICATION

## Ignition and starter switch for motor vehicles

The invention relates to an ignition and starter switch for motor vehicles, especially for  
 5 incorporating in motor vehicle steering locks, actuated by a rotatable switching spindle and comprising a pot-shaped housing with an opening in its base for the switching spindle and a helical spring for automatically returning the switching  
 10 spindle from the "start" angular position to the "drive" angular position, the base of the housing having formed on its two concentric collars projecting into the interior of the housing, between which the helical spring is mounted and  
 15 of which the inner collar surrounds the opening in the base of the housing.

Such switches are known. In these the two collars on that side of the base of the housing which faces towards the interior of the housing  
 20 are so formed on the latter as to define an annular channel open towards the interior of the housing, the floor of the channel being formed by the annular portion of the base of the housing between the two collars. After insertion of the  
 25 helical spring, the open side of the annular channel, within the housing, is closed off by a metallic annular disc which lies against the inner collar and against an annular shoulder on the outer collar and is then secured in place by staking  
 30 to the outer collar of the metallic housing at number of peripheral points.

The aim of the invention is to simplify the construction and assembly of such switches and allow a flatter construction.

35 According to the invention, in a switch of the kind defined in the opening paragraph above, the two collars are joined together at those axial ends of them which are towards the interior of the housing by an annular floor to define an annular  
 40 channel which is open towards the exterior of the housing.

The housing is preferably formed as a one-piece component of plastics material.

45 In the switch according to the invention no annular disc is necessary and likewise the step of staking it is eliminated. Because of this, a flatter construction is also possible. These advantages are of all the more importance as ignition and starter switches are mass-production items.

50 An embodiment of the switch according to the invention is described by way of example in the following in conjunction with the drawings. In the drawings:

55 Figure 1 is a plan view of the pot-shaped housing with the helical spring inserted, looking in the direction of the arrow I in Figure 2, and

60 Figure 2 is a longitudinal section along the line II—II in Figure 1, the associated steering lock housing and the associated switching spindle being illustrated.

In the case illustrated the switch is designed for incorporating in a motor vehicle steering lock, to be actuated by a rotating switching spindle 1 of the steering lock, which is connected to rotate

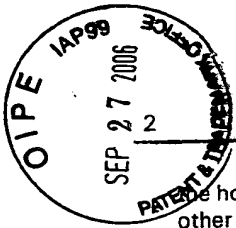
65 together with the cylindrical core or barrel of the cylinder lock provided in the steering lock. The steering lock serves to lock the steering column shaft of the associated motor vehicle, whilst the ignition and starter switch has the purpose of  
 70 switching on and off the ignition and the starter of the engine of the vehicle in question.

Usually it is arranged that the switching spindle 1 is turned back automatically by a spring from that angular position called "start" in which the  
 75 ignition and starter of the engine of the vehicle are both switched on in order to set the engine running, back to the angular position known as "drive" in which the starter is switched off and only the ignition remains switched on, in order to  
 80 keep the engine running.

For this purpose there is a helical spring 2 which is mounted in an annular channel 3 in a pot-shaped housing 4, made of plastics, for the ignition and starter switch, and as shown in Figure  
 85 1 the two ends 5 and 6 of the spring 2 project radially outwards and engage respectively the switch-actuating spindle 1 and the housing 4. The housing 4 is made in the form of the one-piece plastics component and secured in the steering lock housing 7.

90 The base 8 of the housing 4 is formed with two internal cylindrical collars 9 and 10 which are connected together in one piece by an annular floor 11 at those axial ends of them which are towards the interior of the housing, so that the base 8 of the housing has a U-shaped cross section around the spindle 1, as shown in Figure  
 95 2. The annular channel 3 which receives the spring 2 between the two collars 9 and 10 is therefore open towards the outside of the housing, i.e. towards the steering lock, not towards the inside. The inner collar 10 surrounds an opening  
 100 12 in the base of the housing 4, through which the spindle 1 projects for actuating the switch. Both collars 9 and 10 are concentric with respect to one another and also with respect to the opening 12.

In order to allow the spring 2 to be fitted into the channel 3, a radial opening 13 is provided in the base 8 of the housing next to the channel 3, for allowing the passage of the two radially outwardly projecting ends 5 and 6 of the spring 2; this opening extends away from the cylindrical side wall of the housing 4 to meet the mouth 14  
 105 of the channel 3. In the region of this radial opening 13 the outer collar 9 is provided with a peripheral opening 15 which is broader in a peripheral direction than the radial opening 13. The peripheral opening 15 extends from the helical spring abutment surface of the annular floor 11 up to the level of the inner surface of the base 8 of the housing, so that the radial opening 13 and the peripheral opening 15 merge into one another. When the spring 2 is inserted in the  
 110 channel 3 its two radially outwardly projecting ends 5 and 6 extend through the peripheral opening 15 in the collar 9 into the annular space 16 between the latter and the cylindrical side wall of the housing 4. The end 6 adjacent the base 8 of



the housing abuts against the housing 4 and the other end 5, adjacent the annular floor 11, co-operates with the switching spindle 1 in order to turn the latter back from the "start" position to the "drive" position, as explained.

To retain the spring 2 in the channel 3 the end 6 of the helical spring 2 engages under that portion 17 of the base 8 of the housing which extends from the narrow radial opening 13 away in a peripheral direction towards that end of the further peripheral opening 15 which is adjacent the end 6 of the spring 2, this opening 15 being formed in the outer collar 9. A further projection 18 for retaining the spring 2 in the channel 3 is provided at that point of the channel 3 which is substantially diametrically opposite the portion 17 of the base of the housing, being formed on the periphery 19 of the inner collar 10 and lying in the plane of the base 8 of the housing, and it projects towards the outer collar 9 in order to engage over the spring 2 and to hold it against the annular floor 11.

#### CLAIMS

1. An ignition and starter switch for motor vehicles, especially for incorporating in motor vehicle steering locks, actuated by a rotatable switching spindle and comprising a pot-shaped housing with an opening in its base for the switching spindle and a helical spring for automatically returning the switching spindle from the "start" angular position to the "drive" angular position, the base of the housing having formed on its two concentric collars projecting into the interior of the housing, between which the helical spring is mounted and of which the inner collar surrounds the opening in the floor of the housing,

characterised in that the two collars are joined together at those axial ends of them which are towards the interior of the housing by an annular floor to define an annular channel which is open towards the exterior of the housing.

2. An ignition and starter switch according to claim 1 in which the housing is formed as a one-piece component of plastics material.

3. An ignition and starter switch according to claim 1 or claim 2 in which projections are provided at the mouth of the annular channel to retain the helical spring in the channel.

4. An ignition and starter switch according to any of claims 1 to 3 in which the base of the housing has in addition to the annular channel a radial opening for the passage of two radially outwardly projecting ends of the spring when it is inserted into the channel.

5. An ignition and starter switch according to any one of claims 1 to 4 in which the outer collar has a peripheral opening for the passage of two radially outwardly projecting ends of the spring when it is inserted in the channel.

6. An ignition and starter switch according to claim 4 or 5 as dependent from claim 3, in which two of the said projections are provided for retaining the spring in the annular channel, one projection being formed by the portion of the floor of the housing next to a radial opening which meets the adjacent end of a peripheral opening, which is peripherally broader than the radial opening, and the other projection projecting from the inner collar towards the outer collar substantially at the diametrically opposite point of the channel.

7. An ignition and starter switch for motor vehicles, constructed substantially as described with reference to the accompanying drawings.